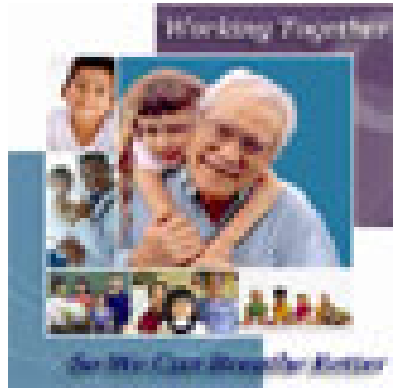
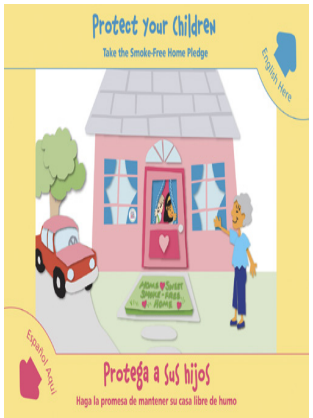
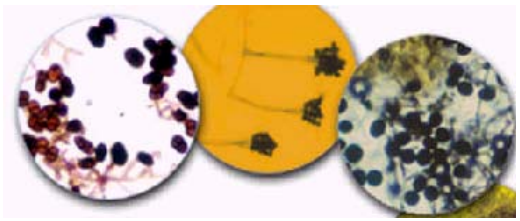
RADON



Overview of EPA Programs

Part II





TOMORROW'S BUSES FOR TODAY'S CHILDREN
CLEAN SCHOOL BUS USA

Outline

Indoor Air Quality in Schools

- Tools for Schools
- Radon
- Asthma/Environmental Triggers
  - Environmental Tobacco Smoke
  - Mold
- Outdoor Air pollution
  - Diesel

“In the construction of buildings, whether for public purposes or as dwellings, care should be taken to provide good ventilation and plenty of sunlight. …schoolrooms are often faulty in this respect. Neglect of proper ventilation is responsible for much of the drowsiness and dullness that …make the teacher’s work toilsome and ineffective.”

Health Reformer, 1871

Why is IAQ important?

- Americans spend about 90% of their day indoors - in classrooms, in offices, at home.
- Pollution indoors is two to five times – and occasionally more than 100 times – higher than out door levels.
- EPA, its Science Advisory Board and others consistently rank indoor air pollution among the top four environmental health risks facing the American people.

Possible health effects

- Increased spread of infectious disease
- Coughing, bronchitis
- Asthma episodes
- Headaches
- Allergic reactions
- Carbon monoxide poisoning
- Legionnaires' disease

Consequences of Poor IAQ

- Reduced learning and teaching
- Poor staff / parent relations
- Liability
- Health problems /comfort/ complaints
- Higher costs to fix problems than to prevent
- Loss of public trust

Bottom Line: What does poor IAQ cost?

- Pay for substitutes
- Student absences reduce state funding
- Liability
- Consultant fees during “emergencies”
- Lower operating efficiency of HVAC
- Costs of relocating staff and students

Causes of poor IAQ

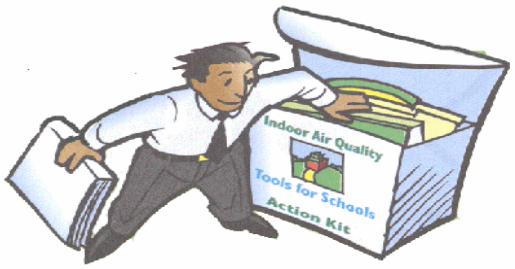
- Reduced ventilation
- Building materials and furnishings
- Deferred maintenance
- Pesticides
- Cleaners
- School supplies – art, science, etc.
- Personal care products

Tools for Schools

- *Indoor Air Quality Tools for Schools* (*IAQ TfS*) is a hands-on, flexible program designed to allow the school to maintain their indoor environment.
- EPA offers partnerships, and provides incentives and recognition to schools implementing *IAQ TfS*.

IAQ Tools for Schools
Key Features

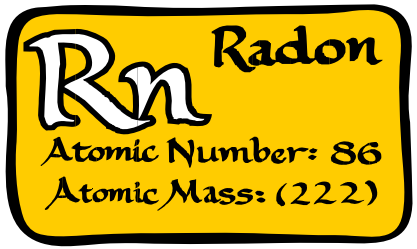
- Low cost / no cost
- Adaptable to individual school needs
- No specialized training required
- Voluntary
- Common sense approach



Contents of Kit

- IAQ Coordinator's Guide
- IAQ Backgrounder
- Checklists for key staff
- Videos (Introduction,Ventilation Basics, Walkthrough)
- Problem Solving Wheel

Walkthrough Findings



Overview of Radon

- Naturally occurring radioactive gas
- Member of Uranium decay series
- Undetectable with senses
- Can have high concentrations indoors

Why we Care about Radon?

- #1 Cause of Lung Cancer-Non-Smokers
- #2 Cause of Lung Cancer in the US
- 21,000 Lung Cancer Deaths/Year in US
- Cause of more than half US Radiation Exposure

Many Deaths are Preventable

EPA Action Levels

- Action Level (4 pCi/L)
- Consider Action (2-4 pCi/L)
- Recommend all schools get tested

Radon Testing

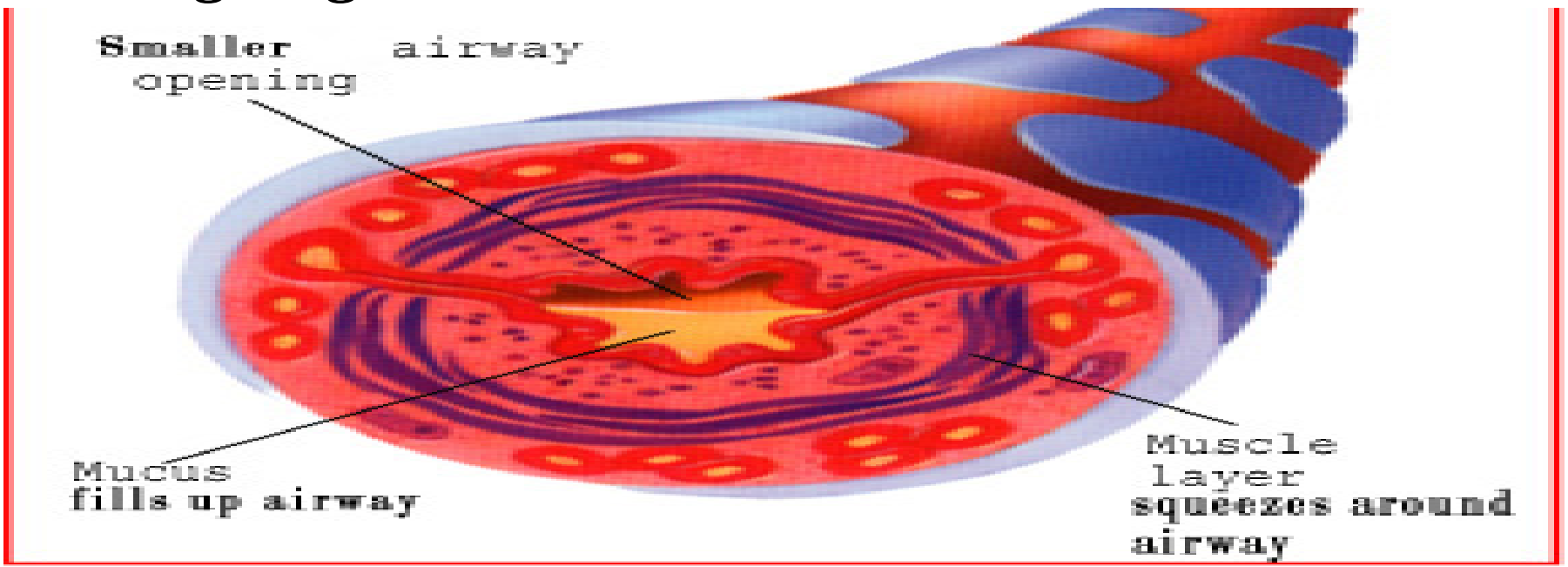
- Out of 927 schools surveyed in 1990
  - 1 in 5 schools have at least one room >4 pCi/L
- Region 5 has strong State Radon Programs
- Usually short term test (~$10/kit)
- Test all ground level Classrooms
- EPA has published a school testing guide

Asthma Epidemic

- Afflicts about 20 million Americans (6.3 million children)
- Asthma leads to **2 million emergency room** visits and **5,000 deaths** per year in the U.S.
- Asthma accounted for more than **14 million missed school** days in 2000.
- Asthma costs (health care costs and lost productivity) totaled **$14 billion** in 2002

What is Asthma?

- A chronic, or long term, disorder of the airways in the lungs. It can be life threatening.
- A disease that causes wheezing, breathlessness, chest tightness, & nighttime or early morning coughing



Components of Asthma Management

Medical Management of Asthma

- Diagnosis
- Treatment
- Patient / Parent education

✓ Environmental Management of Asthma

- Improving awareness of and reducing indoor triggers
- Reducing outdoor air triggers
- Education (patients, parents, health care providers)

Asthma Triggers

Allergens:

molds, dust mites, cockroaches, animal dander, pollens, foods

Irritants:

secondhand smoke, strong odors, aerosols, volatile organic compounds, ozone, particulate matter

5 major indoor asthma triggers

3 major outdoor asthma triggers related to mobile sources

Second Hand Smoke

- Second hand smoke is a complex mixture of chemicals
- Several of these chemicals are known to be hazardous to human health.
- Children are particularly sensitive to tobacco smoke.

Why Focus on Children's Exposure

- 29% of homes with children age 6 & under regularly allow smoking (CRCPD, 1994)
- CDC estimates that 15 million children under the age of 18 are exposed to secondhand smoke in the home (CDC Morbidity & Mortality Weekly Report, 1997)
- Exposure to secondhand smoke can **cause asthma** in children who have not previously exhibited symptoms.

More on Children's Exposure

- Exposure to secondhand smoke increases the risk for **Sudden Infant Death Syndrome**.
- Infants and children younger than 6 who are regularly exposed to secondhand smoke are at increased risk of lower respiratory track infections, such as **pneumonia and bronchitis**.
- Children who regularly breathe secondhand smoke are at increased risk for **middle ear infections**.

HOW to keep a smoke-free home:

- Until you quit smoke outside.
- Do not to smoke in your home or car and do not permit others to do so.
- Do not to smoke around children, especially infants and toddlers and do not allow others to do so.

Mold

The KEY is Moisture Control

- Install and use exhaust fans that are vented to the outdoors in kitchens and bathrooms and vent clothes dryers outdoors.
- Ventilate the attic, basement and crawl spaces to prevent moisture build-up.
- Clean humidifiers according to manufacturer's instructions and refill with fresh water daily.

If you have a leak…

- Fix the leaky plumbing and leaks in the building envelope as soon as possible.
- Dry water-damaged materials **within 24 hours**
- Keep the areas clean.

Outdoor Air Pollutants

- **Ozone**
  - Commonly referred to as smog
  - Major Source: Combustion Engines
- **Particulate Matter**
  - Combustion, Industrial processes, area sources & mobile sources
- **Sulfur Dioxide**
  - Combustion of fossil fuels & industrial processes

Why focus on School Buses?

- Most bus fleets run on diesel fuel.
- Almost 400,000 diesel school buses in U.S
- Diesel emissions contribute to:
  - Ozone
  - Particulate Matter/Haze
  - Air Toxics
- 24 million children ride school buses
- Diesel exhaust presents a significant public health risk

"Clean School Bus USA" Program

Tomorrow's Buses for Today's Children

- EPA Voluntary Program
- Public and Private partnership
- Focusing on the cleanest possible transportation for today's students by addressing the ***3 "R's"***
  - Reduce Idling/Reinforce Smart Driving Practices
  - Retrofit Diesel Engines
  - Replace Engines/Vehicles

- The benefits: healthier kids and communities
- Funding is available to school districts for some projects.

Environmental Education, Recycling and Sunwise

Environmental Education

- **Vision**

  Increase the public's knowledge of environmental issues and sense of personal responsibility to ensure environmental stewardship

Mission

Ensure that ee which is scientifically sound and effective, is used as a tool to protect human health and the environment and improve student academic achievement.

EE Strategic Objectives

1. Support teachers, students and K-16 Education

2. Support States

3. Support Research

4. Support Environmental Careers

Annual Funding and Orgs Reached

- **Regional Grants**

  - About $190,000 per year
  - Over 130 grants
  - Max amount per grant is $50,000

Organizations Funded

Non profit	47%
College/Univ	21%
Schools	13%
Local Govt	12%
State Govt	3%
Tribes	4%
Non commercial Broadcaster	1%

Health Related EE Grants

- **Healthy Soil, Healthy Food-Healthy Me!**
  MN Horticultural Society

- **Reducing Children's Exposure to Pesticide and Asthma Triggers**
  Environmental Health Watch, OH

- **Cooperative Radon Survey**
  Lake Superior State University, MI

President's Environmental Youth Awards

Recognizes young people for projects that demonstrate their commitment to the environment

- **Regional Certificate Program**
  Participants receive certificates signed by the President of the United States

- **National Awards Competition**
  One outstanding project from each of the 10 EPA regional offices is selected for national recognition

Speakers available

- Recycling Educator is available for presentations
- EPA Ambassadors Program
  - Voluntary
  - Presentations take place in Chicagoland

Sun Wise

- **A program for grades K-8 to raise children's awareness of:**
  - **Stratospheric ozone depletion**
  - **UV radiation, and**
  - **Simple sun safety practices**

SunWise
a program that radiates good ideas